

Harold N. Moldenke

CLERODENDRUM Burm.

Additional & emended bibliography: J. G. A. Forster, Fl. Ins. Austral. Prod. 45. 1786; Hook., Curtis Bot. Mag. 116 [ser. 3, 46]: pl. 7141. 1890; Kolb, Neub. Deutsch. Gartenmag. 43: 129. 1890; Engl., Bot. Jahrb. 13: Übers. 93. 1891; Rehd., Journ. Arnold Arb. 15: 324--325. 1934; Blatter, Caius, & Mhaskar in Kirkikar & Basu, Indian Med. Pl., ed. 2, imp. 1, 3: 1912 & 1945--1952, pl. 743--747. 1935; Rehd., Journ. Arnold Arb. 17: 64 (1936) and 18: 286. 1937; Sobti & Singh, Prod. Indian Acad. Sci. B.54: 141--144. 1961; Manzoor-i-Khuda, Tetrahedron 21: 797. 1965; Kundu & De, Bull. Bot. Surv. India 10: [397]--400 & 402--405, fig. 5, 11, 18, 19, & 33--36. 1968; Jain & Tarafder, Econ. Bot. 24: 249. 1970; Blatter, Caius, & Mhaskar in Kirtikar & Basu, Indian Med. Pl., ed. 2, imp. 2, 3: 1912 & 1945--1952, pl. 743--747. 1975; Oakes & Butcher, U. S. Dept. Agr. Misc. Bull. 882: 90. 1962; Mitchell & Rook, Bot. Dermat. 714. 1979; Mold., Phytologia 60: 462--467, 483--496, 504--506, 508, 510, & 511. 1986.

Balfour (1885) says of this genus: "One species in the Terai forms a large shrub beneath every tree, generally intermixed with ferns, as polypodium, pteris, and goniopteris, and its sweet odour is borne far through the air. *Clerodendron* leaves, bruised, are used to kill vermin, fly-blows, etc., in cattle, and the twigs form toothpicks. Its flowers are presented to Siva (Mahadeo), milk, honey, flowers, fruit (ambrosia), etc. being offered to the pacific gods, as Vishnu, Krishna, etc.; while Mudar (*Calotropis asclepias*), Bhang, *Cannabis sativa*, *Datura*, flesh, blood, and spirituous liquids are offered to Siva, Durga, Kali, and other destroying deities. The Burmese cultivate a fragrant double clerodendron. One species, supposed by Dr. Stewart to be *C. infortunatum*, L., called Kali basuti on the Beas, occurs in the Siwalik tract, and occasionally in the plains, and is probably the one that Edgeworth mentions as being used in the Ambala tract to give fire by friction." Obviously, the double-flowered species referred to here is *C. philippinum* f. *multiplex* (Sweet) Mold. and the one supposed to be *C. infortunatum* is probably *C. viscosum* Vent.

The Jain & Tarafder (1970) reference has been mis-cited in a previous installment of these notes as occurring on page "294" instead of page 249.

CLERODENDRUM ACULEATUM (L.) Schlecht.

Additional bibliography: Oakes & Butcher, U. S. Dept. Agr. Misc. Bull. 882: 90. 1962; Mitchell & Rook, Bot. Dermat. 714. 1979; Mold., Phytologia 60: 359--360. 1986.

Oakes & Butcher (1962) and Mitchell & Rook (1979) report that the spines of this plant often produce a dermatitis due to mechanical injury.

CLERODENDRUM DINKLAGEI Gürke

Additional bibliography: Mold., *Phytologia* 59: 253--255 (1986) and 60: 146, 193, 364, 365, & 367. 1986.

CLERODENDRUM FLORIBUNDUM R. Br.

Additional bibliography: Nees, *Rob. Br. Vermisch. Bot. Schrift.* 3 (1): 367. 1827; Mold., *Phytologia* 60: 464 & 496. 1986.

CLERODENDRUM FORTUNATUM L.

Additional bibliography: Edwards, *Bot. Reg.* 30: pl. 19 in textu. 1894; Mold., *Phytologia* 60: 465 & 495. 1986.

CLERODENDRUM GRANDIFLORUM (Hook.) Schau.

Additional bibliography: Mold., *Phytologia* 60: 128--152, 359--361, 366, 368, & 462. 1986.

CLERODENDRUM INCISUM var. *MACROSIPHON* (Hook. f.) J. G. Baker

Additional bibliography: Boorsma, *Meded. Lands Plant.* 52: 110. 1902; Mold., *Phytologia* 60: 275 & 277--281. 1986.

CLERODENDRUM INDICUM (L.) Kuntze

Additional & emended bibliography: Boorsma, *Meded. Lands Plant.* 52: 110. 1902; Blatter, Caius, & Mhaskar in Kirtikar & Basu, *Indian Med. Pl.*, ed. 2, imp. 1, 3: 1945 & 1951--1952, pl. 747. 1935; Kundu & De, *Bull. Bot. Surv. India* 10: 398 & 402--404. 1968; Jain & Tarafder, *Econ. Bot.* 24: 249. 1970; Blatter, Caius, & Mhaskar in Kirtikar & Basu, *Indian Med. Pl.*, ed. 2, imp. 2, 3: 1945 & 1951--1952, pl. 747. 1975; Mold., *Phytologia* 60: 466--467 & 483--496. 1986.

Jain & Tarafder (1970) summarize the reported medicinal uses for this species, with authority for each report, as: fever, atrophy, emaciation, cachexy, gravel, thirst, cholera, consumption, cough, bronchitis, puerperal fever, and blindness.

A key to help distinguish this species from other Indian medicinal species will be found in the present series of notes under *C. inerme* (L.) Gaertn. Other keys that may prove useful are the following, modified by me in a few minor respects and with the nomenclature updated. Bor & Raizada (1954) distinguish the showy-flowered Indian species as follows:

1. Corolla-tube at least 4 inches long.....*C. indicum*.
- 1a. Corolla-tube only 2 inches long or less.
 2. A climbing plant.....*C. thomsonae*.
 - 2a. Shrubs or small trees.
 3. Calyx-rim truncate or very short-toothed.....*C. inerme*.
 - 3a. Calyx-rim distinctly dentate or lobed.
 4. Corolla red or scarlet.....*C. kaempferi*.
 - 4a. Corolla white or rose.
 5. Calyx with peltate glands.
 6. Calyx-lobes triangular-acute.....*C. philippinum*.
 - 6a. Calyx-lobes broadly ovate and foliaceous..*C. viscosum*.
 - 5a. Calyx without peltate glands.
 7. Flowers in a pendulous panicle.....*C. wallichii*.

7a. Flowers in erect panicles.

8. Panicles trichotomous; leaves 6 inches or more long..

C. trichotomum.

8a. Panicles dichotomous; leaves 2 inches long or less..

C. phlomidis.

Prain (1963) distinguishes the Bengal taxa as recognized by him as follows:

1. Corolla irregularly salverform, 1½ inches long or less.
2. Panicles axillary or if [occasionally in *C. phlomidis*] terminal then the panicle lax and leafy below.
3. Calyx minutely toothed; leaf-blades marginally entire.
4. Leaf-blades obovate or elliptic, subobtusate, opposite or rarely ternate; fruiting-calyx closely appressed to the base of the fruit.....*C. inerme.*
- 4a. Leaf-blades elliptic-acute or linear-oblong, generally ternate; fruiting-calyx subpatent....."*C. neriifolium*".
- 3a. Calyx lobed to the middle; leaf-blades marginally sinuate or serrate.....*C. phlomidis.*
- 2a. Panicles terminal.
5. Calyx subtruncate or short-lobed; bracts ½--1½ inches long.
6. Leaves subsessile; calyx very shortly 5-lobed; panicle dense; leaf-margins always serrate.....*C. serratum.*
- 6a. Leaves very shortly petiolate; calyx subtruncate; panicle open; uppermost leaf-blades sometimes entire.....
C. serratum var. *wallichii.*
- 5a. Calyx deeply 5-lobed; bracts smaller.
7. Panicle pendulous; corolla pure-white; fruit purple; leaf-blades narrowly obovate or lanceolate.....*C. wallichii.*
- 7a. Panicle erect; corolla tinged with pink or rose; fruit black; leaf-blades broadly ovate or subrotund.
8. Calyx large, the segments broadly lanceolate, suberect, & acute; panicle open, pyramidal.....*C. viscosum.*
- 8a. Calyx small, the segments subulate; panicle compact, corymbose.....*C. philippinum.*
- 1a. Corolla narrowly funnelform, 3 inches long or longer.*C. indicum.*

Neal (1965) distinguishes the Hawaiian species as follows:

1. Corollas blue.....*C. ugandense.*
- 1a. Corollas white and/or red, yellowish, or pinkish.
2. Vines or vine-like plants.
3. True vines, not spinose; corolla red.
4. Calyx white; flowers in open clusters.....*C. thomsonae.*
- 4a. Calyx red to purple; flowers in dense clusters.....
C. umbellatum.
- 3a. Vine-like spiny shrubs with long arching branches; corolla white.....*C. aculeatum.*
- 2a. Erect shrubs.
5. Corolla scarlet, not fragrant.
6. Leaf-blades marginally entire or dentate, downy.....
C. speciosissimum.
- 6a. Leaf-blades 3--5-lobed, smooth.....*C. paniculatum.*

- 5a. Corolla yellow, white, or pinkish, mostly fragrant.
 7. Corolla light-yellow to white.....*C. minahassae*.
 7a. Corolla white or pinkish.
 8. Corolla-tube 3 to 4 inches long.....*C. indicum*.
 8a. Corolla-tube much shorter.
 9. Downy-leaved shrubs 2--8 ft. tall; leaves to 12 inches long.
 10. Leaf-blades downy on both surfaces.
 11. Corolla doubled, 1 inch wide, white or pink-tipped
 C. philippinum f. *multiplex*.
 11a. Corolla single, ½ inch wide, white and lilac.....
 C. macrostegium.
 10a. Leaf-blades only downy (and red) beneath.
 9a. Smooth-leaved shrub or small tree; leaves smaller.....
 C. glabrum.

Srivastava (1976) distinguishes the Gorak species as follows:

1. A climbing shrub.....*C. splendens*.
 1a. Erect shrubs or small trees.
 2. Leaves less than 7.5 cm. long; calyx not or only slightly enlarged in fruit.....*C. phlomidis*.
 2a. Leaves over 7.5 cm. long; calyx much enlarged in fruit, turning red.
 3. Leaf-blades marginally entire.....*C. indicum*.
 3a. Leaf-blades marginally serrate or crenate-dentate.....
 C. viscosum.

Babu (1977) distinguishes the species at Dehra Dun as follows:

1. Corolla-tube 10--15 cm. long, nodding.....*C. indicum*.
 1a. Corolla-tube not over 4 cm. long.
 2. Calyx 5-parted nearly to the base, bright red in fruit.
 C. viscosum.
 2a. Calyx truncate or shortly 5-dentate, green in fruit.
 3. Leaves sessile, ternate, the blades serrate-dentate; corolla strongly zygomorphic, violet.....*C. serratum*.
 3a. Leaves distinctly petiolate, opposite, the blades entire; corolla actinomorphic, white.....*C. inerme*.

Williams (1905) cites *Schomburgk 302* from open grassy places in Thailand; Fletcher (1938), from the same country, cites *Collins 287 & 1312*, *Haniß 12612*, *Keith 172*, *Kerr 393, 2738, & 3904*, *Lakshnahara 428*, *Marcan 2033*, *Pot 1394, 1985, & 2539*, and *Winit 544*; Deb (1961) cites his nos. *1034, 2613, & 2614* from Manipur; Singh (1969) no. *33554* from Lakhaoti; Varma (1981) his no. *212* from Bhagalpur; and Jain & his associates (1982) nos. *784 & 929* from Haryana, India. Box, in his unpublished Flora of Antigua, cites *Duss 32*.

It should be noted that the labels accompanying *Hahn 514* and *Robinson 2* do not indicate that the collections were made from cultivated plants, but I am assuming that they were. Some sheets of *Glaziou 8185* are erroneously labeled "8186". The *Vidal 2642* called "kôn khan", is sterile and is tentatively placed here -- its leaves are

extraordinarily broad.

Material of *C. indicum* has been misidentified and distributed in some herbaria as *C. aculeatum* L., *C. fortunatum* L., *C. infortunatum* L., and *C. ternifolium* H.B.K. On the other hand, the Spørensens & al. 1147, distributed as typical *C. indicum*, actually represents *f. semiserratum* (Wall.) Mold., while Jiménez 4603 and Mejía & Zanoni 6743 are *C. incisum* var. *macrosiphon* (Hook. f.) J. G. Baker and the Hort. Bogor. XV.J.B.XXVIII.4, identified as *C. indicum* by Bakhuizen in 1923 and as *C. nutans* Wall "vel aff." by him in 1922, is not verbenaceous.

Citations: SOUTH CAROLINA: Charleston County: *Sass s.n.* [near Charleston, Dec. 1948] (Hi--34060). Georgetown Co.: *Tarbox s.n.* [Murrell's Inlet, Sept. 3, 1939] (Hi--14258). Jasper Co.: *Ahles & Bell 20993* (Hi--92943); *Leonard & Radford 2771* (Bl--244576, Ld, Ld, Ld, Mi, N, Or--133184, Or--133185). GEORGIA: Camden Co.: *Loomis s.n.* [St. Mary's, Nov. 1916] (W--719758). Grady Co.: *Faircloth 1594* (Ne--120729). Mitchell Co.: *Thorne 6091* (It), *7469* (It). Sapelo Island (McIntosh Co.): *W. H. Duncan 20667* (Au--107518, Hi--106313, Mi, S, Ws). County undetermined: *Bangs s.n.* [Oct. 1923] (A). FLORIDA: Alachua Co.: *O'Neill 7172*(I). Brevard Co.: *Rhoads s.n.* [Cocoa, Sept. 21, 1936] (Fl--12091), *s.n.* [Cocoa, 27 July] (Fl--13172). Columbia Co.: *Huger s.n.* [Lake City, Jan. 1899] (N); *Reimer s.n.* [Nov. 15, 1904] (N). Dade Co.: *Bessey s.n.* [Oct. 18, 1907] (Ln--69966); *Gillis 8892* (Ft, Ft, Ft, Go); *Lightfoot 2* (Ba), *s.n.* [near Little River 1918] (N); *Woodbury s.n.* [Sept. 10, 1937] (Bu). De Soto Co.: *L. H. Bailey 13080* (Ba). Duval Co.: *Curtiss s.n.* [near Jacksonville] (G). Hamilton Co.: *Huger s.n.* [Dec. 1898] (C). Hardee Co.: *F. H. Sargent 6486* (St). Highlands Co.: *L. H. Bailey 13087* (Ba, Ba). Manatee Co.: *Cuthbert s.n.* [Bradenton] (Fl--21053). Orange Co.: *Wescott s.n.* [Orlando, 8-30-29] (Fl--20962). Pinellas Co.: *Thorne 1288* (It). Polk Co.: *D. S. Correll 6293* (No--18209). Sarasota Co.: *J. M. Hall 1609* (It), *1610* (It); *Tracy s.n.* [Sept. 23, 1915] (N). Seminole Co.: *P. C. Schallert 20833* in part (B, Je--7135, Mi, S, Se--196919, Ws), *s.n.* [1/10/52] (Ur). Merritt Island (Brevard Co.): *Beal s.n.* [Nov. 1927] (Ur), *s.n.* [Jan. 1928] (Ur). Sanibel Island (Lee Co.): *Brumbach 8677* (Mi, N, W--2773128). MISSISSIPPI: George Co.: *K. E. Rogers 7043-C* (N). LOUISIANA: East Baton Rouge Par.: *Attabhanyo s.n.* [Nov. 8, 1972] (Lv); *N. F. Petersen s.n.* [Sept. 22, 1909] (N), *s.n.* [Oct. 1909] (Lv, Lv). Jefferson Par.: *L. E. Fox 2120* (Fx, Fx). Lafourche Par.: *Pratt s.n.* [22 October 1971] (Lv); *C. A. Smith s.n.* [June 1970] (Ne--15672). Plaquemines Par.: *Ewan 17489* (Au--120970, Ba, Gg--381236, Tl); *Langlois 206* (F--134003), *s.n.* [Pointe-a-la-Hache 1881] (I). St. Charles Par.: *Smith & Smith 559* (Ne--78310). St. James Par.: *Ewan 19856* (Ac, Ba). St. Mary Par.: *Dooley & al. 433* (Ne--69054). Terrebonne Par.: *Arceneaux 136* (It); *Wurzlow s.n.* [Nov. 20, 1913] (N), *s.n.* [1913] (W--693288, W--693289), *s.n.* [Oct. 16, 1914] (Lv, Lv, Lv, N, N), *s.n.* (Lv). Washington Par.: *Thomas & al. 74529* (Ne--181192, Ne--181193). Parish undetermined: *C. A. Brown 2295* (Mi). TEXAS: Harris Co.: *Thurow s.n.* [Sept. 25, 1914] (W--865604). CUBA: Havana: *Herb. Cub. Estac. Cent. Agron. s.n.* [Nov. 1909] (Es); *Serre s.n.*

[1909] (Bg, Br). Pinar del Río: Van Hermann 6315 (Es). JAMAICA: Caley s.n. (Bm). HISPANIOLA: Dominican Republic: Beauvois s.n. (P). VIRGIN ISLANDS: St. Croix: Herb. Univ. Christian. s.n. (O1); A. E. Ricksecker 489 (S), 498 (B, E--118881, F--70912, N, N, Ob--14858, O1, P, W--425470); L. A. Ricksecker 4426 (B, F--86577, O1, P); J. B. Thompson 1092 (N). St. Thomas: Friedrichsthal 407 (V). LEEWARD ISLANDS: Antigua: Duss 32 (N). Dominica: Eggers s.n. [Decbr. 1881] (B); Imray 153 (K); Wilbur, Dunn, Hesperheide, & Wiseman 8028 (Ld, Mi, W--2534460). Guadeloupe: Duss 2943 (B, B, L, N, W--849945); Quentin 196is (P), 233 (P); Stehlé 2014 (W--1784144). WINDWARD ISLANDS: Barbados: Barrow s.n. [Bot. Stat. Herb. Barb. 261] (N, N). Martinique: Bélanger 559 (P); Duss 1229 (B, B, N, N); Hahn 514 (B), 541 in part (Br), 1016 (Bm, Cb, Cb, G, P, P, P, W--57701, X); Larsen & Larsen 35270 (Ac). St. Lucia: Hastings s.n. [July 30, 1900] (It); Plée s.n. (P); Vélez 3279 (W--1957376). St. Vincent: Guilding 25 (Bm, Ed), s.n. [1822] (B, Ed, Ed, K); Morton 5439 (W--1884349); Smith & Smith 75 (B, C), 1275 (K), 1600 (B, Bm, G). TRINIDAD AND TOBAGO: Tobago: W. E. Broadway 3372 (K), s.n. [Nov. 8, 1932] (A, E--1031106, I), s.n. [Botanic Station] (R); Eggers 5500 (B, K, W--934988). Trinidad: Britton & Britton 2083 [Trin. Bot. Gard. Herb. 10459] (G, N, R, W--1069270); Fredholm s.n. [Oct. 23, 1906] (R). WEST INDIES: Island undetermined: Herb. Reichenbach f. s.n. (V). GUYANA: Herb. Brit. Guian. For. Dept. 7101 (Mi); Herb. Otterbein s. n. [Essequibo] (L, Ld--photo, N--photo); A. S. Hitchcock 16778 (G, N, S, W--1056038); Irwin 1088 (Au--178021, Mi), R.125 (Au--165427); Jenman 1525 (K, U); W. Parker s.n. [Demerara] (K); Persaud 93 (F--532471); Rich. Schomburgk 118 (B, B, K). SURINAM: Soeprato 118 (Ut); Splitgerber 1100 (Le), s.n. (P); Tulleken 26 (Le); Wulschlätgel 1053 in part (B, Br, Br). FRENCH GUIANA: Bouquié 97 (P), s.n. [Mana 1855] (P); W. E. Broadway 369 (G, N, W--1068662); Sagot 1318 (Bm, N, V). BRAZIL: Rio de Janeiro: Glaziou 8185 (P); Pieri s.n. [Herb. Jard. Bot. Rio Jan. 24149] (N). NOSY-BÉ: Hildebrandt 3401d (L, P). PAKISTAN: Northwest States: Royle s.n. [N.W. India] (L). NEPAL: Banerjee, Shrestha, & Upadhyay 2505 (W--2581499); Wallich 1784/I (Cp, L). INDIA: Assam: Chand 2467 (Mi); W. R. Fisher s.n. [Colonial Herb. 16191] (Na); Hooker & Thomson s.n. [Mont. Khasia] (S, W--2497087); Jenkins s.n. [Assam] (Mu--861); Kingdon-Ward 18856 (N); Mann s.n. [Khasia hills] (L); Prain's collector 451 (Bz--19434); Simons s.n. (Bz--19436, Pd). East Punjab: J. R. Drummond 26181 (Ca--244820). Kerala: Stocks, Law, & c. s.n. [Malabar, Concan] (Cp, L, Mu--858, Pd). Karnara: Collector undetermined 177 (Pd). Madras: Herb. Ledebour s.n. [Madras] (L); B. Schmid 3708 (Pd); Yeshoda 509 (N). Maharashtra: Adatia s.n. [Bombay, 20.10.45] (Xa); Bell 142.16 (Xa); L. J. Sedgwick 3153 (Xa). Sikkim: C. B. Clarke 36643 (X); J. D. Hooker s.n. [Sikkim, 1000 ped.] (Cp, L, Pd); Ribu & Rhomoo 3321 (Ca--348687). Surguja: Koelz 19147 (Mi). Uttar Pradesh: Choudhury 90 (W--1170161); Collector undetermined 186 (Pd); Duthie s.n. [9-6-98] (Gg--127016), s.n. [11-6-98] (Ca--269787); Koelz 21564 (Bv, N); Mani s.n. [18/8/30] (N); Punj 96 (N); Raizada 97 (N); Samnasena 99 (Ca--228163); M. Singh 97 (N); U. Singh 371 (Dp--30713, La, N, S). West Bengal: C. B. Clarke 4188 (W--802205); J. M. Cowan s.n. (It);

Herb. Schumacher s.n. (L); Inayat s.n. [4-6-1900] (L); Kuntze 6543 (N); Stiernecrantz s.n. (S); T. Thomson s.n. (L). State undetermined: Carey s.n. (K); Falconer 744 (L, Mu--1184, T); Herb. Hohenacker s.n. (Cp); Herb. Liebmann s.n. (Cp, Cp); Herb. Schreber s.n. (Mu--857); Herb. Vahl s.n. (Cp, Cp); Roxburgh s.n. (Br, Ld--photo, N--photo, S); Wallich 1784/4 (L), 1784/F (L); R. Wight 2317 (L), s.n. [Penins. Ind. Orient.] (L). BANGLADESH: C. B. Clarke 17988 (L); Hooker & Thomson s.n. [Silhet] (Cp, L, Mu--859, N, Pd); King's collector 146 [Colonial Herb. 16199] (Na); Wallich 1784/I (L). SRI LANKA: Amaratunga 1628 (Pd), 1751 (Pd); Balakrishnan NBK.939 (N, Pd, W--2686663), 940 (W--2686662); Collector undetermined s.n. (Pd); Sumithraarachchi & Sumithraarachchi DBS.846 (W--2804886, W); Worthington 4206 (K). BURMA: Lower Burma: Kuntze 6264 (N, N, N). Upper Burma: D. J. Anderson s.n. (Bz--19435); Belcher 766 [U.S.A. Typhus Comm. 766] (W--2213245); Khalil 37 [Colonial Herb. 19554] (Na), s.n. [Saga 1894] (W--369346); Prager s.n. [1890] (L); J. F. Rock 854 (W--1171505). CHINA: Kwangtung: N. J. Andersson s.n. [Whampoa, Dec. 1852] (S). THAILAND: Chitr 128 (Fg); Mrs. D. J. Collins 1312 (W--1701119); Geesink, Hattink, & Phengklai 6462 (Ac); Khit 135 (S); Put 2539 (B); J. F. Rock 1909 (W--1213329). LAOS: Vidal 2141 (Ld), 2620 (Sm), 2642 (Sm). VIETNAM: Annam: Pierre 5223 (B, Ca--54871). Cochinchina: Thorel 102 (B). MALAYA: Kedah: M. R. Henderson 22922 in part (Bz--19433). Pahang: Poore 1366 (Kl--6366). Perlis: M. R. Henderson 22922 in part (N). Singapore: N. J. Andersson s.n. [28 Jan. 1853] (S, S); Sinclair 5284 (W--2912697). GREATER SUNDA ISLANDS: Java: Backer 2589 (Bz--19403), 4692 (Bz--19404), 9899 (Bz--19406, Bz--19407), 14833 (Bz--19405), 18011 (Bz--19397), 21384 (Bz--19396), 22355bis (Bz--19408), 31263 (Bz--19392), s.n. [1902] (Bz--19410, Bz--19411), s.n. [25 Jan. 1903] (Bz--19412), s.n. [Mrt. 1903] (Bz--19413); Bakhuizen 282 (Bz--19391, Bz--19409), 2168 (Ut--24898A), 4077 (Bz--19395), 6217 (Bz--19401, Bz); Beume 5398 (Bz--19393, Bz--19394); Blitar s.n. [VIII.1939] (Bz--19388); Brinkma 224 (Bz--19390); Herb. Bogoriense 19415 (Bz); Kollmann s.n. [Java] (M); Opium en-Zoutregii s.n. (Bz--19398, Bz--19389); Siebold s.n. (Mu--862); Van Semarang s.n. [Nov. 1929] (Bz--19400); Van Steenis 2866 (Bz--19399); Vorderman s.n. [Batavia] (Bz--19414). Kalimantan: Polak 701 (Bz--72991); Posthumus 2038 (Bz--19381). Sumatra: Blinnemeijer 3242 (Bz--19429); Herb. Bogoriense 19426 (Bz), 19432 (Bz); Hooker s.n. [1841] (K); Koens s.n. (Bz--19431); Lbrzing 3596 (Bz--19428); Ultee 130 (Bz--19430); Voogd 397 (Bz--19427). MOLUCCA ISLANDS: Ternate: Beguin 1375 (Bz--19425). NEW CALEDONIAN ISLANDS: New Caledonia: Franc 1284 (Ca--385987); Le Jolis s.n. [Nouvelle Calédonie] (X). HAWAIIAN ISLANDS: Oahu: Judd s.n. [Hakipuu, Nov. 28, 1938] (Bi, N); H. N. Moldenke 21873 (Mi); Wilder s.n. [July 27, 1934] (N); Zimmerman & Judd s.n. [11/28/38] (N), s.n. [June 14, 1943] (N). SAMOAN ISLANDS: Tutuila: D. W. Garber 942 (Bi); Genzell s.n. [Pago Pago] (S). SOCIETY ISLANDS: Raiatea: J. W. Moore 626 (Bi, Bi). Tahiti: Setchell & Parks 157 (Ca--219977). CULTIVATED: Alabama: Fuller s.n. [Nov. 1925] (E--922709). Bermuda: Brown, Britton, & Wortley 1808 (D--556140, N). Brazil: Glaziou 8185 (B, Cp, F--605790, K, L, P). Cuba: C. F. Baker 7276 (B, Po--63796); Ponce y Ramos s.n. [Herb. Roig 305] (Es).

Egypt: Mahdi 195 (Gz), s.n. [5/10/1963] (Gz, Gz, Gz), s.n. [6/11/1963] (Gz, Gz), s.n. [8/10/1968] (Gz); Reyer s.n. [Horto Rhada Cahirae] (V); Thackholm s.n. [7/9/1959] (Gz, Gz), s.n. [24/10/1962] (Gz); Thackholm & Elsayed 206 (Gz, Gz), s.n. [15/5/1961] (Gz), s.n. [24/11/1961] (Gz, Gz, Gz). Florida: L. H. Bailey s.n. [Dec. 31, 1896] (Ba); Dress 1271 (Ba); Hawkes s.n. [October 1958] (Sm); E. G. Hume s.n. [Orlando, July 21, 1930] (Ba, Ba, Ba, Bi, I), s.n. [Orlando, July 31, 1930] (Ba); P. O. Schallert 20833 in part (B, Mu, S, Ws); Sias s.n. [Harbor View, Oct. 1903] (W--441440); Tidestrom 4211 (Ar--19850); Wedding 139 (Ar--19849). Georgia: A. Brown s.n. (Ms--30954); Harmer 178r (Ws); Ridenhour s.n. [Columbus, Oct. 1930] (Ga, Ga, Ga). Guyana: Herb. Brit. Guian. Bot. Gard. s.n. [Sept. 1907] (K, U); W. Parker s.n. [Demerara] (K). Hawaiian Islands: Kuykendell 129 (Bi); J. F. C. Rock 12516 (Bi, Bi); G. P. Wilder s.n. [July 26, 1930] (Bi, Bi), s.n. [July 27, 1934] (Ba, Ca--539995), s.n. [Honolulu, 5.1945] (Mu). Hong Kong: Hance 395 (Bm). India: Collector undetermined 1306/43 (L); D'Almeida 1581 (Xa); Herb. Hort. Bot. Serampore s.n. (Cp); Santapau s.n. [Vict. Gardens, Oct. 1950] (Xa); Voigt s.n. [H. B. Seramp.] (Cp); Wallich 178 (Pd), 885 (Cp), 1784 (K), 1784/E (Mu--860), 1785/5 (K), s.n. (S). Java: Herb. Hort. Bot. Bogor. XI.B.VI. 51 (Bz--25809), XII.B.IV.96 (Bz--26230, Bz--26240), XV.K.A.45.17 (Bz--19382, Bz--19383), XV.K.A.XLV.17 (Bz--19384, Bz--26576), s.n. (Bz--19385, Bz--19386); Koorders 38942b [1*] (Bz--19416), 38943b (Bz--19419, Bz--19420), 38945b [1473*] (Bz--19421), 39148b (Bz--19422), 40842b (Bz--19417, Bz--19418), 42060b [5*] (Bz--19423, Bz--19424); Wolff van Westerrode 340 (Bz--19387). Louisiana: Penfound s.n. [Nov. 1936] (TI). Martinique: Hahn 514 (B). Mauritius: Collector undetermined s.n. (K). Netherlands: Herb. Lugd.-Bat. 908.266-354 (Le). Pakistan: Qureshi s.n. [April 1966] (Kh), s.n. [Nov. 1968] (Kh). Réunion: Brèon s.n. [1843] (Du--166595); Richard s.n. [Jardin de Bourb.] (P). Ruad Island: Paul Duke of Wlrltemberg s.n. [hort. Ibrahim Pascha 1839] (Mu--1635). St. Vincent: Morton 4744 (W--1993911). Samoan Islands: Satchell 241 (Ca--216016, Ca--216017), South Carolina: Huger s.n. [Bluffton, Oct. 1933] (A); Totten s.n. [Brookgreen Gardens, Sept. 24, 1939] (Hi--11130). Sri Lanka: Collector undetermined s.n. [Mrs. D. F. Barnes' place, Oct. 20, 1949] (Pd); Moldenke, Moldenke, & Jayasuriya 28169 (Pd, W--2764432, W--2764458, W). Surinam: Focke 918 (Ut, Ut); Kegel 1030 (Gt); Wullschlgel 1053 in part (Gt, V, V). Texas: Drushel, Tharp, & Barkley 13A163 (Au); Herber s.n. [September 10, 1949] (N), s.n. [Jan. 27, 1950] (N); E. R. Robinson 2 (F--1055643). Trinidad: Kalloo B.666 (N). LOCALITY OF COLLECTION UNDETERMINED: Collector undetermined s.n. (L); Herb. A. Braun s.n. [Podra, Kujer] (L); Herb. Linnaeus 807/1 (Ls, N--photo), 807/2 (Ls, N--photo); Knig s.n. (S). MOUNTED ILLUSTRATIONS: Amman, Comment. Acad. Sci. Imp. Petrop. 8: pl. 15. 1736 (Ld); Bor & Raizada, Some Beaut. Indian Climb. 145, fig. 90. 1954 (Ld); Burm. f., Fl. Indica pl. 43, fig. 1 & 2. 1768 (Ld); Duke & A-yensu, Med. Pl. China 2: 637. 1985 (Ld); Lam., Tabl. Encycl. Mth. Bot. 1: pl. 79. 1791 (Ld, Z); R. Wight, Illustr. Indian Bot. 2: pl. 173. 1850 (Ba).

CLERODENDRUM INDICUM f. *SEMISERRATUM* (Wall.) Mold., *Phytologia* 22: 214. 1971.

Synonymy: *Clerodendron semiserratum* Wall., Numer. List [49], no. 1785 hyponym. 1829. *Clerodendron siphonanthus* var. *semiserrata* (Wall.) C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 595. 1885. *Clerodendron semiserrata* Wall. apud C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 595 in syn. 1885. *Clerodendron siphonanthus* var. *semiserrata* C. B. Clarke ex Mold., *Résumé* 269 in syn. 1958.

Bibliography: Wall., Numer. List [49], no. 1785. 1829; Steud., *Nom. Bot. Phan.*, ed. 2, 1: 383. 1840; Schau. in A. DC., *Prodr.* 11: 675. 1847; Buek, *Gen. Spec. Syn. Candoll.* 3: 106. 1858; C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 595. 1885; Mold., *Alph. List Inv. Names Suppl.* 1: 7. 1947; Mold., *Résumé* 269. 1958; Anon., *Kew Rec. Tax. Lit.* 270. 1971; Mold., *Phytologia* 22: 214. 1971; Anon., *Biol. Abstr.* 53 (12): B.A.S.I.C. S.51, 1972; Mold., *Biol. Abstr.* 53: 6372. 1972; Hocking, *Excerpt. Bot. A.* 21: 117. 1973; Mold., *Phytol. Mem.* 2: 272, 388, 389, 393, & 538. 1980; Brenan, *Ind. Kew. Suppl.* 16: 71. 1981; H. N. & A. L. Mold. in Dassan. & Fosb., *Rev. Handb. Fl. Ceyl.* 4: 428. 1983.

This form differs from the typical form of the species in its more or less marginally crenate-serrate leaf-blades.

The form is based on *Wallich 1785* from Prome and Segain, Upper Burma, collected in 1826 and deposited in the East India Company Herbarium at Kew. Clarke (1885) comments that it is "Apparently a much-branched shrub; but the specimens are possibly only short imperfect flower-branches rapidly developed from a normal plant of *C. Siphonanthus* cut to the base by a hot-weather jungle fire; for the calyx and corolla are exactly as of *C. Siphonanthus*." He describes the plant as having "Leaves opposite short-petioled elliptic crenate-lobate, panicle terminal 3--4-fl'd."

Sørensen and his associates encountered what seems to be this form of the species in mixed evergreen forests of Thailand, at 350 m. altitude; their material was identified as and distributed as typical *C. indicum* (L.) Kuntze. It should be noted that not all of the leaf-blades exhibited by this collection exhibit the serration.

Citations: THAILAND: *Sørensen, Larsen, & Hansen 1147* (Cp, Cp).

CLERODENDRUM INERME (L.) Gaertn., *Fruct. Sem. Pl.* 1: 271, pl. 57, fig. 1. 1788.

Synonymy: *Niir-notsjiil* Rheede, *Hort. Malab.* 5: 97. 1685.

Niir-notsjiil Rheede, *Hort. Malab.* 5: pl. 49. 1685. *Baccifera malab. fructu oblongo, tetracocco, calyculato* Ray, *Hist. Pl.* 2: 1573. 1688. *Niir notsjiil* Ray, *Hist. Pl.* 2: 1573. 1688. *Periclymeni similis arbor myrtifolia maderaspatensis* Pluk., *Almagest. Bot.* pl. 211, fig. 4 (1692) and p. 287. 1696. *Jasmini flore, frutex philippensis, foliis floribusque fere ternis* Petiv., *Gazophyl.* 67. 1702. *Jasmini flore frutex philippensis foliis floribusque fere ternis* Petiv., *Gazophyl.* pl. 42, fig. 7. 1702. *Periclymeni similis myrtifolia arbor maderaspatensis* Pluk., *Amalth. Bot.* 167. 1705. *Jasminum glanduliferum foetidum, zeylanicum* J. Burm., *Thes. Zeyl.* 127. 1737. *Jasminum litoricum* Rumpf, *Herb. Amboin.* 5: 86, pl. 46. 1747.

Volkameria inermis L., Fl. Zeyl. 231 (1747) and Sp. Pl., ed. 1, imp. 1, 2: 637. 1753 [not *V. inermis* Blanco, 1837, nor Reinw., 1850, nor Sessé & Moc., 1976]. *Ghuraenda* Herm. ex L., Fl. Zeyl. 104. 1747. *Catesbaea? javanica* Osbeck, Dagbok Ostind. Resa 92. 1757. *Volkameria ramis inermibus* L. apud P. Mill., Gard. Dict., abrdgd. ed. 5: *Volkameria 2.* 1763. *Jasminum flore frutex philippensis, foliis floribusque fere ternis* Petiv. apud N. L. Burm., Fl. Indica 137 in syn. 1768. *Volkameria ramis inermibus, foliis ovalibus integerrimis* L. ex N. L. Burm., Fl. Indica 136. 1768. *Jasminum littoreum* Rumpf ex N. L. Burm., Fl. Indica 136 in syn. 1768. *Jasminum glandiferum foetidum zeylanicum* J. Burm. apud N. L. Burm., Fl. Indica 136 in syn. 1768. *Nir notsjil* Rheede apud N. L. Burm., Fl. Indica 136 in syn. 1768. *Baccifera malabarica, fructu oblongo tetracocco calyculato* Ray apud N. L. Burm., Fl. Indica 136 in syn. 1768. *Serouni laut seu jasminum sylvestre* Kleinhof ex N. L. Burm., Fl. Indica 137 in syn. 1768. *Volkameria (inermis) ramis inermibus* L. apud P. Mill., Gard. Dict., abrdgd. ed. 6: *Volkameria 2.* 1771. *Jasmini flore frutex philippensis, foliis floribusque fere ternis* Petiv. apud Jacq., Collect. Suppl. 117 in syn. 1796. *Ovieda inermis* [Retz.], Nom. Bot. 155. 1772 [not *O. inermis* Burm., 1840, nor Burm. f., 1894, nor Jacks., 1921.]. *Niir notsjil* Rheede apud Jacq., Collect. Suppl. 117 in syn. 1796. *Volkameria commersonii* Poir. in Lam., Encycl. Méth. Bot. 8: 688. 1808. *Volkameria inermis, foliis ovatis, integerrimis; corymbo trichotomo; ramis teretibus, apice subpubescentibus* Poir. in Lam., Encycl. Méth. Bot. 8: 688 in syn. 1808. *Volkameria foliis ovatis, integerrimis, nitidis; pedunculis calycibusque glabris* Willd. ex Poir. in Lam., Encycl. Méth. Bot. 8: 688 in syn. 1808. *Peryclimene similis, myrtifolia arbor, maderaspatensis* Pluk. apud Poir. in Lam., Encycl. Méth. Bot. 8: 688 in syn. 1808. *Nir-notsiit* Rheede apud Poir. in Lam., Encycl. Méth. Bot. 8: 688 in syn. 1808. *Volkameria inermis* Willd. ex R. Br. in Ait., Hort. Kew., ed. 2, 4: 65 in syn. 1812. *Clerodendrum inerme* R. Br. in Ait., Hort. Kew., ed. 2, 4: 65. 1812. *Volkameria nereifolia* Roxb., Hort. Beng., imp. 1, 46 nom. nud. 1814; Fl. Indica, ed. 2, 3: 64. 1832. *Clerodendron ovatum* Poir., Encycl. Méth. Suppl. 4: 352. 1816 [not *Clerodendron ovatum* R. Br., 1810]. *Clerodendron coriaceum* Poir., Encycl. Méth. Suppl. 4: 353. 1816 [not *Clerodendron coriaceum* R. Br., 1810]. *Clerodendrum inerme* var. *calicibus campanulatis obtuse dentatis* Blume, Bijdr. Fl. Ned. Ind. 9: 808. 1825. *Clerodendron commersonii* (Poir.) Spreng. in L., Syst. Veg., ed. 16, 2: 758. 1825. *Clerodendron coromandelianum* Spreng. in L., Syst. Veg., ed. 16, 2: 758. 1825. *Clerodendron javanicum* Spreng. in L., Syst. Veg., ed. 16, 2: 759. 1825 [not *C. javanicum* Walp., 1844]. *Clerodendron inerme* R. Br. apud Spreng. in L., Syst. Veg., ed. 16, 2: 788. 1825. *Clerodendrum inerme* Gaertn. ex Blume, Bijdr. Fl. Ned. Ind. 14: 808. 1826. *Clerodendron neriifolium* Wall., Numer. List [49], no. 1789 hyponym. 1829. *Clerodendron neriifolium* ♂ *lanceolatum* Wall., Numer. List [49], no. 1789/B. 1829. *Clerodendrum coromandelianum* Spreng. ex Loud., Hort. Brit., ed. 1, 247. 1830. *Clerodendrum salicifolium* Lodd. ex Loud., Hort. Brit., ed. 1, 247. 1830. *Clerodendrum madagascariense* Lodd. ex Loud., Hort. Brit., ed.

1, 246 in syn. 1830 [not *C. madagascariense* Mold., 1950].
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An erect, rounded, loosely branched bush or large, heliophilous, many-stemmed, branched, often rambling, scrambling, or semi-scandent to scandent, evergreen shrub, mostly coastal, to 10 m. tall or 12 m. long, sometimes prostrate, sometimes a large liana climbing to 28 m. in trees, often growing in maritime mangrove associations; stem to 4 cm. in diameter, hollow, dark-brown to gray or whitish-gray, smooth, fissured, soft; bark whitish-gray or pale- to dark-brown, soft; wood hard, white; slash light-brown; branches and branchlets slender, terete to obtusely or acutely tetragonal, light-buff or gray, sometimes purplish, very minutely puberulent or glabrous, tuberculate with small persistent petiole-bases, weak, diffuse, often pendent, sometimes arcuate or reclining and much tangled; nodes not annulate; principal internodes 2--7.2 cm. long; leaves decussate-opposite or rarely ternate, aromatic, very variable in shape and size, bitter to taste; petioles slender, 4--11 mm. long, subglabrate, often purplish or red-purple, sometimes leaving prominent corky (but not spinose) sterigmata after being shed; leaf-blades thin-chartaceous when dried, often rather fleshy with the venation sunken on both surfaces when fresh, glossy or semi-glossy, rather uniformly bright- or deep-green on both surfaces or dull dark- or mid-green above and lighter beneath, elliptic, elliptic-oblong, or narrow-lanceolate to ovate or obovate, 2--14 cm. long, 0.8--8 cm. wide, quite variable, apically very shortly acuminate or rounded to an obtuse or blunt point, marginally entire, basally acute, glabrate and shiny above, obscurely pulverulent-puberulent and densely punctate or glabrate beneath; midrib and secondaries often impressed on fresh leaves; veinlet reticulation usually sparse and obscure on both surfaces; inflorescence axillary or supra-axillary; cymes few, solitary, opposite, borne in the uppermost leaf-axils, mostly trichotomous, few- (mostly 3--7-) flowered, 4.5--9.5 cm. long, divaricate, loosely flowered, to 7 cm. wide; peduncles slender, patulous, 1.5--4 cm. long, shorter than the subtending leaf, subglabrate, often red-purple; pedicels slender, 5--13 mm. long, glabrate, often red-purple; large bracts none; bractlets and prophylla few, not obvious, linear-subulate, 1--3 mm. long, borne at the bases of the cyme-branches and pedicels; flower-buds white, the petals purple-tipped; flowers "honeysuckle-like", sweetly fragrant with a musty odor in the early morning hours, later non-odorous; calyx campanulate, about 4 mm. long, green or pale-green, the rim 5-toothed, the teeth broadly triangular, apically acute; corolla hypocrateriform, white or touched with purple, the tube slender, 2--3 cm. long, often

sulphur-yellow below and pink above, glabrous, apically ampliate and infundibular, the limb 5-lobed or 5-fid, about 1.3 cm. wide, the lobes obovate, 1/3 as long as the tube; stamens 4, didynamous, long-exserted (to about 2.5 cm.); filaments slender, varying from maroon, crimson, scarlet, or red to blue, bluish-red, magenta, cerise, or purple, sometimes green, usually basally white, about 3 cm. long; anthers yellow or finally purple-brown, ovate, composed of 2 thecae; style exserted, purple or maroon to magenta, pink, or blue; stigma "simple"; ovary imperfectly 4-celled, obsoletely 4-lobed, each cell 1-ovulate; fruit drupaceous.

This is a very widely distributed and polymorphic species of seashores, saline marshes and swamps, muddy tidal riverbanks, and the edges (mostly) of mangrove forests in tropical and subtropical Asia from Pakistan, India, Burma, the Andaman Islands, and Sri Lanka eastward to Thailand, Indochina, and Malaya to the coasts of Australia and almost throughout Pacific Oceanica, north to Hainan, Hong Kong, Taiwan, and the coast of southern China; introduced in parts of the West Indies, coastal Brazil, Zaire, and Mauritius as a sand-binder; cultivated in many places in both the eastern and western hemispheres to check beach erosion, in desert regions, and as a specimen or topiary plant.

Linnaeus originally described the species as from Sri Lanka and India, his holotype 809/3 having been examined by me in the Linnean Herbarium in London. Jacquin (1796) and Raeuschel (1797) regarded it as from (eastern) India. Kurz (1870) recorded it from Aberdeen to South Point in the Andaman Islands, but notes "doubtfully wild" there. Chamisso (1832) noted that it was "Vulgaris hortorum hospes" in Russian gardens, doubtless from plants introduced by the Romanzoff expedition from collections made on the islands of Radack, Guam, and Luzon. He describes the plant as "Suaveolentes amoenas arbusculae flores ornatissimis elegantiae morum laude Radacensibus grato sunt coronamento". In 1837 Bojer listed it as in cultivation in the royal garden at Pamplemousse, Mauritius. Loudon (1830) informs us that it was introduced, as *C. inerme*, into English gardens from the East Indies in 1824 and, as *C. salicifolium*, in 1832; Sweet (1826), however, gives the date of introduction, as *C. inerme*, as 1692, also from the East Indies, and as both *C. coromandelianum* and *C. neriifolium* in 1824, again from "E. Indies".

Thwaites & Hooker (1861) refer to *C. inerme* as "Very common near the sea" in Sri Lanka. Fernandez-Villar, in 1880, lists the species from Luzon, Mindanao, Panay, Cebu, Paragua, Jolo, and Basilan islands in the Philippines. Koorders (1898) lists it from the southwestern part of Celebes. Balfour (1885) avers that it is "A plant of India, China, the Moluccas, and N. Holland". Briquet (1895) claims that it is only cultivated in Java, but Miquel (1867) and Koorders & Valeton (1900) assert that it is indigenous there.

Brandis (1906) describes *C. inerme* as "A straggling almost scandent evergreen shrub" growing in "Tidal jungles and sea coast of Bengal and both Peninsulas [of India]", flowering there throughout the year, but chiefly from July to November.

Clarke (1885) reported what he called *C. inerme* from only "India

and Ceylon near the sea, from Bombay to Tenasserim [Burma]", and what he called *C. nerifolium* from the "Malay Peninsula near the sea, from Chittagong to Malacca, frequent. Distrib. Malaya, China, Australia, Polynesia". Cooke, in 1905, regarded *C. inerme* as occurring naturally "Throughout India near the sea" and in Sri Lanka, where, he avers, it blossoms from November to January. Hunter, in 1909, lists it as cultivated in gardens on Prince of Wales Island, but comments that "I do not know whether or not it is indigenous" there.

Woodrow (1910) says that "This shrub grows on the banks of salt-water creeks in the Concan and the bright green of its sprawling branches on low banks that have little other vegetation, lend a charm to a desolate region. It also grows inland, and in the Municipal Garden, Karachi, a gateway is clothed in its deep green foliage, lit up by white flowers 3/4 inch in diameter". He adds that it may be propagated by seeds or cuttings. Dunn & Tutcher, in 1912, report it common near the sea at Hong Kong. Firminger (1918) describes it as "A subsucculent shrubby species, common throughout the Deccan....[where it] makes a good hedge".

Merrill (1918, 1923) tells us that *Clerodendrum inerme* is common along sandy shores, seashores, and tidal streams "throughout the Philippine Islands". Rodger (1922) records it from Burma. In 1924 Lam gives its distribution, as known to him, as "Britishch Indien, Ceylon, Dekkan, Siam, Hongkong, Hainan, Kwantung, Formosa, Malakka, Sumatra, Java, Kajuadi- und Tanan Djampea-Insel, Timor, Lombok, Buton, Tukan-Besie-Insel, Celebes, Buru, Ceram, Klein-Ceram, Borneo, Philippinen (Luzon, Polillo, Panay), Neu-Guinea, Neu-Mecklemburg, Neu-Pommern, Palau-Inseln, Marianen, Karolinen, Aru-Insel, Queensland, Nord-Australien, Neu-Südwaless, Neu-Kaledonien, Fitschi-, Samoa- und Tonga-Insel."

Bakhuizen (1929) calls the species a common, large, rambling shrub and gives its overall distribution, as known to him, as "Along the sea-coast from S. E. Asia and China to Polynesia and Australia, including the Malay Archipelago, Philippines and New Guinea."

Backer (1931) asserts that in Java it is an "Opgerichte of min of meer klimmende heester, vaak met lange, overhangende of zich tusschen andere planten door omhoog werkende en weer ahangende takken", flowering throughout the year in "West- tot Oost-Java, dikwerf op zilte of brakke, vochtige of droge gronden, vooral aan of nabij de zee, aan strandkreeken en aan zoutwaterpoelen, minder vaak op zandstrand en in duinen."

Guillaumin (1932) refers to it as a very common seashore shrub at sea-level, with an overall distribution, as known to him, of New Caledonia, the Loyalty Islands, Queensland, New South Wales, North Australia, Fiji, Tonga, Samoa, the Caroline, Mariana, Santa Cruz, and Solomon Islands, Bismark Archipelago, the Admiralty Islands, New Guinea, and Malaysia.

Joshi (1936) calls it a "seashore plant, but very commonly used for hedges and [for] covering banks, walls, etc." in Lahore [Pakistan], flowering there during the summer. Van Leeuwen (1937) records it as native in the Salajar Islands. MacMillan (1943) lists

it as cultivated both in India and in Sri Lanka, recommending it "for seacoast and moderately dry regions". Yuncker (1943) reports it native and common on the sea cliffs on Niue Island. Meeuse & Lam (1945) give its natural distribution as the "Mascarenes to Polynesia". St. John, in 1948, records it from Angaur and Pingelap islands in the Caroline group. Pételot, in 1853, assures us that it is "Commun dans toute l'Indochine". Fosberg (1948) found it on Saipan, forming a mangrove-like association with *Acrostichum aureum*, *Hibiscus tiliaceus*, and *Paspalum virgatum*.

Taylor (1950) lists *Clerodendrum inerme* from Rongelap and Bikini Atolls in the northern Marshall Islands, where, he says, "It is chiefly found in the neighborhood of the settlements or coconut plantings on the islands; but [it] ranges widely, though not characteristic either of the dense woodlands or of the tiny more barren islets." Hara (1959) collected it on Tanegashima in the Satsunan group (Ryukyu Archipelago).

Shah (1962) reports it forming dense thickets along the edge of the sea creeks on Salsette Island (near Bombay). Ohwi (1965) found it on "Wet banks along rivers", but "rare", on Kyushu Island (Japan), and gives its overall distribution only as "Ryukyus, Formosa, China, Burma, Malaysia to Australia". Hatusima (1966) refers to the plant as occurring "In the littoral bush" from "India to N. Australia, Polynesia through Malaysia, northwards to the Ryukyus". Shah (1969) lists it from Gujarat; Santapau (1967) from Saurashtra; Santapau & Shah (1969) again from Salsette Island; and Imandar (1971) again from Gujarat, India. Alexander (1971) asserts that it is "Widely distributed from India through tropical Asia and Australia to the Pacific Islands". Fong and his associates (1972) list it from Guam, while Stone (1967) records it from Romonum Island in the Truk lagoon. Sykes (1970) found it again on Niue Island.

Liogier (1965) records it from the West Indian island of St. Croix, but Fosberg (1976) claims that this record is "rather unlikely".

Rao (1971) lists *C. inerme* among the strand shrubs and trees in the Indian states of Kutch, Saurashtra, Gujarat, Maharashtra, Mysore, Kerala, Tamil Nadu, Andhra Pradesh, Orissa, and West Bengal, "often stunted when in the mid- or outer-strand [and] growing under maritime influences". In his 1963 work he reports finding it growing "in white sand with a black tint" in association with *Vitex negundo*, sedges, and grasses on consolidated sand dunes on Ramaswaram Island (off the coast of Tamil Nadu). Rao & Razi (1973) list it again from Mysore, where, they say, it flowers and fruits during the major part of the year and is a common hedge plant, emitting "a foul smell when bruised". Paliwal & Singh (1982) record it from Uttar Pradesh.

Weiner (1971) tells us that the species is frequent near the seashore in the Tongan Islands "and occurs also from India through Malaya to Polynesia"; St. John & Smith (1971) found it growing on the rocky coasts of Futuna Island. Horikawa (1972) gives its distribution in detail on Taiwan and in the Ryukyu Islands.

Fosberg and his associates (1979) report it, as *C. inerme* var.

oceanicum, from the Marianas Islands (Guam, Pagan, Saipan, Sarigan, Rota, & Tinian), Caroline Islands (Angaur, Ant, Babeldach, Dublon, Eauripik, Etal, Ifaluk, Kapingamarangi, Kusaie, Lamotrek, Losap, Lukunor, Moen, Namonuito, Ngarakabesang, Nomwin, Nukuoro, Palau, Peliliu, Satawal, Satawan, Sinsorol, Pingelap, Pis, Ponape, Tol, Truk, Ulithi, Uman, & Yap), Marshall Islands (Ailuk, Ailinginae, Ailinglapalap, Arno, Bikini, Eniwetok, Jaluit, Jemo, Kwajalein, Lae, Majuro, Rongelap, Ujelang, Utirik, & Wotho), Gilbert Islands (Butaritari, Nonouti, Onotoa, Tabiteuea, & Tarawa), and Nauru Island. Lasser and his associates (1974) record it as cultivated in Venezuela.

Jafri & Ghafoor, in a personal communication to me, refer to *C. inerme* as "A very common hedge plant of the plains of Sind and Punjab [Pakistan]. In Karachi it thrives well. Its cuttings are used for producing new plants....[It blooms] Almost throughout the year." They further say of it: "A native of the sea coasts of India and Sri Lanka, introduced and naturalized along sea shores of Burma, Australia and China." However, I know of no evidence that the species was purposefully introduced by man in any of the areas they enumerate; I feel that it is most certainly indigenous there.

Herbst & Allerton found it to be a very common plant in the Gilbert Islands; Solomon & George report it common in jungle areas on Ponape; Berry affirms that it grows on the beaches and in the jungles on Sonsorol Island "to a height of about 8 feet". On Yap it is said by Takamatsu to be common in moist places, while in the Tongan Islands Setchell & Parks say that it "lines the beach in seaside shrubbery"; in Papua Brass reports it "a rambling beach shrub common all along the coast at the inner edge of the mangroves"; Taylor found it common in the Marshall Islands, while Henry reports it common on Taiwan. It is recorded by Rao, Aggarwal, & Mukherjee from Krusadi and Rameswaram Islands off the coasts of India. On the Great Barrier Reef it is referred to by Stoddart as common on Saunders Island, "an extremely common straggling shrub" on Eagle Island, and "common on shingle ridges" on the Two Islands -- Fosberg found it "locally common on lagoon beaches" on Lizard Island. Fosberg also reports it only "occasional" in the forest on steep limestone bluffs on Guam, abundant in soil derived from coral limestone in disturbed ground along roadsides on Peliliu Island, occasional to scattered in village coconut-breadfruit plantations on Wattagai Island, and "clumped to scattered" on savannas on Yap; with Evans he found it common in forests and the peaty edges of taro swamps on Lamotrek Island. In Guam Moran speaks of it as a "2-meter tall shrub with weak often reclining branches on coral beaches under *Cocos* palms". On Guadalcanal Kajewski describes it as a common seaside shrub. On Hainan Island it is said by Fung to be "rare" at the edges of cultivated fields, while Liang describes it as "scandent in open thickets" and Lau refers to it as "fairly common on dry gentle slopes in sand".

In the Marshall Islands this species is said by Fosberg to "form low thickets around abandoned taro pits" on Utirik Island, sometimes "forming masses to 2 m. high in old taro pits" and "forming low

thickets generally through the coconut groves" on Ailuk Island. Carroll avers that it is "said to have been present [in the Caroline Islands] before European contact". In the Maldive Islands, according to Fosberg, it inhabits the coral soil of waste places. Mathews found it both cultivated and "wild" in Saudi Arabia, the wild plants said to be escapes from the 10-foot tall hedges widely planted there.

The unnumbered Teijsmann collection, cited below, from the botanical garden at Bogor (Java) is said to have been taken from a plant originally from a Bombay (India) garden. The Fosberg 11000 collection, also cited below, was taken from cultivated material on Fanning Island [in the Line Islands group], but the plants were originally brought there from the Gilbert Islands "where the species is native". The unnumbered Hartling collection, from material growing at the New York Botanical Garden, was originally obtained from Paris in 1902. The unnumbered Young collection, also cited below, was from material cultivated at Chapman Field, Florida, from seeds collected in Honolulu and presented by Harold L. Lyon on January 21, 1921, originally grown in Honolulu from seeds collected on Prince of Wales Island [Malaya] by J. A. Kusche and said to have been "A small tree growing near the beach" there.

Macbride (1959) is of the opinion that the Ruiz & Pavon specimen, identified as representing this species and presumably collected on the coast of Peru, may actually be *C. tessmanni* Mold., but this is most unlikely.

Clerodendrum inerme has been reported by various collectors as an inhabitant of seashores, salt marshes, low sand dunes, sand cays, river sand-bars, saltwater swamps, rocky headlands and limestone cliffs, the edges of brackish canals and tidal streams, and, of course, the mangrove association belt (especially its inner landward edge), often growing in the first row of woody plants on sandy beaches, at the edge of littoral scrub, on coastal bluffs, in tidal mud flats, on and behind sea walls, on coral islands, on coral beaches under coconuts, in lowland and swamp forests, alluvial forests, and the edges of lagoons and foreshores, but also in or at the edges of lava fields, on rocky hillsides, along open country roads, "exposed with no foliage cover on sunny sandy flats", on savannas, in hedge-thickets near houses, in relatively open vegetation along stream banks, in wet humus at the edges of canals, between trees in coastal swamps, in low thickets and dense forest scrub of ravines, from sealevel to about 80 m. altitude, but naturalized or cultivated in areas up to 1550 m. altitude.

Cooray reports the species common in Sri Lanka, where Wirawan refers to it as "a straggling shrub", Fosberg & Balakrishnan describe it as only "occasional" on the levees of rice fields, and Mueller-Dombois calls it "very abundant in the first row of woody plants on sandy beaches and particularly at the outer margin of open beach areas."

[to be continued]